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MEMORANDUM

DATE: February 24, 1988

TO: Priscilla Anderson, TATM, Toxicologist, E & E, Seattle

FROM: Michael G. Bray, TATM, Chemist, E & E, Seattle *(MB)*

SUBJ: Organics Analyses Data Quality Assurance Review, Corigliano Site

REF: TDD: T10-8707-009
PAN: TWA-0526-RFA

The organics quality assurance review of 9 soil samples collected from the Corigliano site has been completed. Volatile and semivolatile organics analyses were performed by Analytical Resources, Inc., Seattle, Washington.

The soil samples were numbered:

T7070509 through T7070511
T7070513 through T7070518

DATA QUALIFICATIONS

I Sample Holding Times

Volatile

<u>Sample No.</u>	<u>Date Sampled</u>	<u>Date Analyzed</u>
T7070509	7/30/87	8/5/87
Rerun 509	7/30/87	8/5/87
T7070510	7/30/87	8/5/87
Rerun 510	7/30/87	8/5/87
T7070511	7/30/87	8/5/87
Rerun 511	7/30/87	8/6/87
T7070513	7/30/87	8/5/87
Rerun 513	7/30/87	8/5/87
T7070514	7/30/87	8/5/87
Rerun 514	7/30/87	8/6/87
T7070515	7/30/87	8/5/87
Rerun 515	7/30/87	8/6/87
T7070516	7/30/87	8/5/87
Rerun 516	7/30/87	8/6/87

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T7070517	7/30/87	8/5/87
Rerun 517	7/30/87	8/6/87
T7070518	7/30/87	8/6/87
Rerun 518	7/30/87	8/6/87

Semivolatiles:

<u>Sample No.</u>	<u>Date Sampled</u>	<u>Date Extracted</u>	<u>Date Analyzed</u>
T7070509	7/30/87	8/3/87	8/6/87
T7070510	7/30/87	8/3/87	8/6/87
T7070511	7/30/87	8/3/87	8/6/87
T7070513	7/30/87	8/3/87	8/6/87
T7070514	7/30/87	8/3/87	8/7/87
T7070515	7/30/87	8/3/87	8/7/87
T7070516	7/30/87	8/3/87	8/7/87
T7070517	7/30/87	8/3/87	8/7/87
T7070518	7/30/87	8/3/87	8/7/87

II GC/MS Tuning and Performance

Volatiles - bromofluorobenzene (BFB) ion abundance 8/5/87: Acceptable

<u>M/Z</u>	<u>ION ABUNDANCE CRITERIA</u>	<u>% RELATIVE ABUNDANCE</u>
50	15.0 - 40.0% of the base peak	33.7
75	30.0 - 60.0% of the base peak	58.7
95	Base peak. 100% relative abundance	100.
96	5.0 - 9.0% of the base peak	8.1
173	Less than 1.0% of the base peak	0
174	Greater than 50.0% of the base peak	76.1
175	5.0-9.0% of Mass 174	5.3 (7.0) ¹
176	Greater than 95.0% but less than 101.0% of mass 174	75.1 (98.7) ¹
177	5.0 - 9.0% of mass 176	5.2 (6.9) ²

¹ value in parenthesis is % mass 174.

² value in parenthesis is % mass 176.

Volatiles - bromofluorobenzene (BFB) ion abundance 8/6/87: Acceptable

<u>M/Z</u>	<u>ION ABUNDANCE CRITERIA</u>	<u>% RELATIVE ABUNDANCE</u>
50	15.0 - 40.0% of the base peak	28.6
75	30.0 - 60.0% of the base peak	52.4
95	Base peak. 100% relative abundance	100.
96	5.0 - 9.0% of the base peak	8.1
173	Less than 1.0% of the base peak	0
174	Greater than 50.0% of the base peak	69.4

175	5.0-9.0% of Mass 174	4.0	(5.8) ¹
176	Greater than 95.0% but less than 101.0% of mass 174	68.2	(98.7) ¹
177	5.0 - 9.0% of mass 176	4.0	(5.9) ²

¹ value in parenthesis is % mass 174.

² value in parenthesis is % mass 176.

Semivolatiles - decafluorotriphenylphosphine (DFTPP) ion abundance
8/6/87: Acceptable

M/Z	ION ABUNDANCE CRITERIA	% RELATIVE ADUNDANCE	
51	30.0% - 60.0% of mass 198	44.2	
68	less than 2.0% of mass 69	0	(0) ¹
69	mass 69 relative abundance	45.0	
70	less than 2.0% of mass 69	0	(0) ¹
127	40.0% - 60.0% of mass 198	45.6	
197	less than 1.0% of mass 198	0	
198	base peak, 100% relative abundance	100	
199	5.0 - 9.0% of mass 198	6.2	
275	10.0 - 30.0% of mass 198	20.5	
365	greater than 1.00% of mass 198	1.60	
441	present, but less than 40.0% of mass 198	54.1	
443	17.0 - 23.0% of mass 442	11.7	(21.6) ²

¹ value in parenthesis is % mass 69.

² value in parenthesis is % mass 442.

Semivolatiles - decafluorotriphenylphosphine (DFTPP) ion abundance
8/7/87: Acceptable

M/Z	ION ABUNDANCE CRITERIA	% RELATIVE ADUNDANCE	
51	30.0% - 60.0% of mass 198	45.2	
68	less than 2.0% of mass 69	0	(0) ¹
69	mass 69 relative abundance	46.6	
70	less than 2.0% of mass 69	0	(0) ¹
127	40.0% - 60.0% of mass 198	46.2	
197	less than 1.0% of mass 198	0	
198	base peak, 100% relative abundance	100	
199	5.0 - 9.0% of mass 198	6.2	
275	10.0 - 30.0% of mass 198	19.2	
365	greater than 1.00% of mass 198	1.36	
441	present, but less than mass 443	6.61	
442	greater than 40.0% of mass 198	45.8	
443	17.0 - 23.0% of mass 442	9.64	(21.0) ²

- ¹ value in parenthesis is % mass 69.
² value in parenthesis is % mass 442.

III Calibration

Initial Calibration

Data not available.

Continuing Calibration

Volatiles

Response Factors SPCC's: Acceptable

<u>Compound</u>	<u>Required</u>	<u>8/5/87</u>	<u>8/6/87</u>
Chloromethane	min. 0.300	0.549	0.583
1,1-Dichloroethane	min. 0.300	2.783	3.012
Bromoform	>0.250	0.384	0.340
1,2,2,2-Tetrachloroethane	min. 0.300	0.818	0.791
Chlorobenzene	min. 0.300	0.905	0.893

Percent Difference, CCC's (required 25% maximum): Acceptable

<u>Compound</u>	<u>8/5/87</u>	<u>8/6/87</u>
Vinyl Chloride	16.74%	13.24%
1,1-Dichloroethene	-11.15%	-15.99%
Chloroform	4.65%	-7.72%
1,2-Dichloropropane	-8.90%	-9.85%
Toluene	-3.50%	2.63%
Ethylbenzene	11.51%	11.03%

All response factors were greater than zero

Semivolatiles

Response Factors, SPCC's (required 0.05 minimum): Acceptable

<u>Compound</u>	<u>8/6/87</u>	<u>8/7/87</u>
N-Nitroso-Di-n-Propylamine	0.881	0.916
Hexachlorocyclopentadiene	0.271	0.288
2,4-Dinitrophenol	0.088	0.106
4-Nitrophenol	0.153	0.161

Percent Difference, CCC's (required 25% maximum):

<u>Compound</u>	<u>8/6/87</u>	<u>8/7/87</u>
Phenol	12.4%	15.6%
1,4-Dichlorobenzene	7.5%	4.8%
2-Nitrophenol	5.2%	10.4%
2,4-Dichlorophenol	14.6%	21.9%
Hexachlorobutadiene	-3.4%	-0.9%
4-Chloro-3-Methylphenol	14.2%	21.7%
2,4,6-Trichlorophenol	15.6%	17.8%
Acenaphthene	2.4%	-2.9%
N-Nitrosodiphenylamine	6.8%	15.4%
Pentachlorophenol	-11.6%	-11.6%
Fluoranthene	-5.1%	-21.8%
Di-n-Octyl Phthalate	9.5%	10.8%
Benzo(a)Pyrene	14.6%	13.7%

All response factors were greater than zero

IV Blanks

Volatiles

The low level volatile blank run at 0820 on 8/5/87 contained 6 ug/kg of methylene chloride. Samples associated with this blank that contain less than 60 ug/kg of methylene chloride will be reported as not detected for that compound.

Associated samples: T7070509, 509 rerun, 510, 510 rerun, 511, 513, 513 rerun, 514, 515, 516, 517.

The low level volatile blank run at 1047 on 8/6/87 contained an estimated 2 ug/kg of methylene chloride. Samples associated with this blank that contain less than 20 ug/kg of methylene chloride will be reported as not detected for that compound.

Associated samples: T7070511 rerun, 514 rerun, 516 rerun, 517 rerun, 518.

The medium level volatile blank run at 1640 on 8/6/87 contained methylene chloride at an estimated 110 ug/kg, acetone at an estimated 300 ug/kg, toluene at an estimated 50 ug/kg, ethylbenzene at an estimated 31 ug/kg and total xylenes at 260 ug/kg. These compounds found at concentrations less than the below stated limits will be reported as not detected for samples T70770515 rerun and T70770518 rerun.

Methylene chloride	1,100 ug/kg
Acetone	3,000 ug/kg
Toluene	500 ug/kg

Ethylbenzene	155 ug/kg
Total xylenes	1,300 ug/kg

Semivolatiles - No analytes were detected at twice the CLP Contract Required Quantitation Limits.

V Surrogate Recovery

Volatiles

<u>Sample No.</u>	<u>Toluene-d8</u>	<u>4-Bromo- Fluoro- benzene</u>	<u>1,2-Dichloro- ethane-d4</u>
Soil Requirements	81-117%	74-121%	70-121%
8/5 Method Blank	107%	106%	78.9%
8/6 Method Blank	104%	103%	88.7%
Medium Method Blank	104%	110%	93.5%
T7070509	137%*	74.7%	77.7%
509 Rerun	128%*	82.6%	87.5%
510	149%*	74.5%	78.2%
510 Rerun	136%*	81.9%	83.2%
511	146%*	70.0%*	95.8%
511 Rerun	144%*	73.6%	86.3%
513	168%*	66.3%*	92.4%
513 Rerun	154%*	68.5%*	92.2%
514	148%*	66.6%*	85.8%
514 Rerun	152%*	66.8%*	83.7%
515	211%*	96.5%	81.9%
515 Rerun	105%	111%	95.7%
516	142%*	68.6%*	93.3%
516 Rerun	147%*	74.6%	88.1%
517	143%*	69.0%*	93.6%
517 Rerun	133%*	71.0%*	84.9%
518	252%*	130%*	79.8%
518 Rerun	102%	127%*	93.7%

* Asterisked values are outside QC Limits.

Two surrogates were out of specification for the following samples: T7070511, 513, 513 rerun, 514, 514 rerun, 516, 517, 517 rerun and 518. For the volatile fraction of these samples positive results will be flagged as estimated (J) and negative results will have the sample quantitation limits classified as estimated (UJ).

Semivolatiles

<u>Sample I.D.</u>	<u>Nitro- benzene-d5</u>	<u>2-Fluoro- biphenyl</u>	<u>P-Ter- phenyl-d14</u>	<u>Phenol-d5</u>	<u>2-Fluoro phenol</u>	<u>2,4,6- Tribromo- phenol</u>
Soil Requirements	23-120%	30-115%	18-137%	24-113%	25-121%	19-122%
Method Blank	97.1%	103%	113%	99.8%	105%	101%
T7070509	105%	118%	108%	113%	112%	114%
510	12.4%*	52.5%	86.2%	14.7%*	5.9%*	34.4%
511	111%	105%	111%	105%	163%*	108%
513	91.5%	105%	89.7%	114%	103%	93.7%
514	78.7%	94.8%	93.8%	94.4%	92.0%	86.7%
515	42.5%	58.2%	88.1%	47.1%	42.5%	28.4%
516	33.3%	38.3%	53.5%	52.5%	63.9%	DL ¹
517	56.3%	45.2%	44.9%	51.3%	95.0%	20.2%
518	55.7%	45.7%	49.8%	55.6%	116%	26.1%

¹ DL = Diluted Out

* = Asterisked values are outside QC limits

Three surrogates were out of specification for the acid fraction of sample number T7070510. For the acid fraction of this sample positive results will be flagged as estimated (J) and negative results will have sample quantitation limits classified as estimated (UJ).

VI Matrix Spike/Matrix Spike Duplicate

Compound	% Recovery		RPD	Requirements	
	MS	MSD		% Recovery	RPD
Volatiles					
1,1-Dichloroethene	96.4	96.9	-0.6	59-172	22
Trichloroethene	90.1	95.0	-5.2	62-137	24
Chlorobenzene	105	107	-1.7	60-133	21
Toluene	115	122	-3.9	59-139	21
Benzene	108	113	-4.3	66-142	21
Semi volatiles - B/N					
1,2,4-Trichlorobenzene	110	64.8	52*	38-107	23
Acenapthene	100	64.8	43*	31-137	19
2,4-Dinitrotoluene	56.3	43.7	25	28-89	47
Pyrene	130	82.6	45*	35-142	36
N-Nitroso-Di-n-Propylamine	123	52.1	81*	41-126	38
1,4-dichlorobenzene	83.1	54.9	41*	28-104	27
Semivolatiles - Acids					
Pentachlorophenol	265*	67.6	120*	17-109	47
Phenol	102*	64.8	45*	26-90	35
2-Chlorophenol	106*	77.5	31	25-102	50
4-Chloro-3-Methylphenol	99.3	60.6	48*	26-103	33
Nitrophenol	94.4	77.5	20	11-114	50

* Asterisked values are outside QC limits

No action is required on Matrix spike/matrix spike duplicate analyses.

VII Compound Identification

A spot check was performed of relative retention times and mass spectra matching between samples and standards. All parameters were acceptable for both volatile and semi volatile analyses.

VIII System Performance - Acceptable

IX Overall Assessment of Data

The usefulness of the data is based on the criteria outlined in the "Laboratory Validation Functional Guidelines for Evaluating Organics Analyses" (R-582-5-5-01).

Based on the information available the data is acceptable for use with the above stated data qualifications.